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Group-Washington

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August 20, 1993

William F. Caton
Acting Secretary
Federal Communications Commission
Mail Stop 1170
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Dear Mr. Caton:

Re: *CC Docket No. 93-162 - Local Exchange Carriers' Rates Terms and Conditions for Expanded Interconnection for Special Access*

On behalf of Pacific Bell, please find enclosed an original and eight copies of its "*Direct Case*" in the above proceeding.

Please stamp and return the provided copy to confirm your receipt. Please contact me should you have any questions or require additional information concerning this matter.

Sincerely,

Jo Ann Goddard

Enclosures

No. of Copies rec'd 0+7
List A B C D E

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of Local Exchange Carriers' Rates Terms and Conditions for Expanded Interconnection for Special Access	CC Docket No. 93-162

DIRECT CASE OF PACIFIC BELL

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August 20, 1993

SUMMARY

Pacific Bell provides herein its response to the Commission's Order Designating Issues for Investigation (CC Dkt. No. 93-162) with respect to tariff provisions for Expanded Interconnection Service ("EIS"). A substantial portion of Pacific Bell's submission addresses the initial issue of Rate Levels specified by the Commission. Pacific Bell provides extension explanation and support for its Tariff Review Plan documentation, including, in detail, both Recurring Function Investment and Recurring Cost elements. Pacific Bell further explains its Investment Methodology and addresses, in detail, all elements of its Non-Recurring Functions for EIS. In addition, Pacific Bell responds to Rate Level investigation requests for information relating to overhead costs; a sample price out; non-recurring charges for recurring costs; floor space charges; power charges; cross-connection charges and termination equipment charges; and security charges. Pacific Bell shows, through its presentation, that its rate levels have been reasonably developed.

Pacific Bell also addresses extensively the Rate Structure issue. It shows that its overall rate structure, including all elements thereof, is just, reasonable and not unlawfully discriminatory.

Finally, Pacific Bell addresses the non-rate related terms and conditions of its EIS tariff which the Commission specified for investigation. It provides proper support for each and every such

term and condition of its EIS tariff. These terms and conditions are also just, reasonable, and not unlawfully discriminatory.

On the basis of this submission, the Commission should conclude that all aspects of Pacific Bell's EIS tariff are acceptable.

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Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Local Exchange Carriers' Rates Terms and Conditions for Expanded Interconnection for Special Access	)	CC Docket No. 93-162

DIRECT CASE OF PACIFIC BELL

Pursuant to the Order Designating Issues for Investigation (DA 93-951) ("Designation Order") issued July 12, 1993 in the above-captioned proceeding, Pacific Bell hereby submits its direct case on the issues that are applicable to Pacific Bell's tariff governing expanded interconnection service for special access ("EIS").

Pacific Bell has included a visual presentation of its expanded interconnection service arrangement to facilitate understanding of how its rate elements combine to form a well thought out support structure for interconnector facilities and equipment. (Reference Appendix O, Diagram C.)

I. RESPONSE TO ISSUES DESIGNATED FOR INVESTIGATION

A. Rate Levels

(a) Tariff Review Plan

The Designation Order requires exchange carriers to furnish with their direct cases the information specified in the

Tariff Review Plan ("TRP").[1] That information is attached hereto as Appendices A through N. Each Appendix contains the TRP data and work papers associated with one of the disaggregated "functions" identified in the Designation Order.[2] Appendix S contains charts by central office (and for the cross connect element) which display each partitioned rate element and demonstrates that the sum of the partitioned unit costs and rates equals the unit cost and rate, respectively, of the unpartitioned rate element. In addition, Pacific Bell has filed concurrently diskettes containing the TRP in Lotus 1-2-3 format.

(b) Itemized Cost Information

(1) TRP Documentation

The Designation Order directs exchange carriers to furnish documentation explaining the derivation of the cost items listed in each TRP chart together with worksheets and source listings.[3] Pacific Bell sets forth below its narrative explanation of the costs underlying each of the disaggregated "functions" defined by the Commission. Initially, investment costs associated with each recurring TRP function are analyzed. Next, the methodology for computing recurring expenses, taxes and cost factors is explained. Pacific Bell used the same methodology to calculate these costs for all of the functions. Finally, an itemized explanation of the costs associated with each non-

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1 Designation Order, ¶ 14.

2 Id. at 15.

3 Id. at ¶ 22(b)(1).

recurring function is presented, as required by Paragraph 22(b)(3) of the Designation Order. Because non-recurring costs are not comprised of investment and annual charges, they are not included in the TRP charts.

RECURRING FUNCTIONS INVESTMENT

a. Entrance Facility Installation Function

This is a non-recurring function only. Non-recurring function costs are discussed below in Section A(b)(3).

b. Entrance Facility Space Function

Pacific Bell's investment in Entrance Facility Space consists of vault racking (USOA account 244100, conduit), cable riser and ladder racking (account 223210, digital circuit equipment), land (account 211100), and building (account 212100). Workpapers relating to these costs are contained in Appendix B. This function is a recurring function only and is equivalent to Pacific Bell's Cable Space rate element.

Vault racking investment was developed by first identifying the cost of racking and associated hardware per fiber run per foot. That cost was computed by dividing the cost of a full wall of racking per foot (based on current vendor information), by 25, the number of fiber cables which can be placed on a full wall of racking. The cost per fiber run per foot was then multiplied by the average length of the two fiber runs available in each central office. Where only one vault entrance was available, the single length of the vault fiber run was used. The assumption

of full capacity (i.e., 25 cables per wall) makes unit investment lower than in situations where capacity has not been reached.

Vault space land and building investment was developed by identifying the square footage requirements per fiber cable per foot within the vault, multiplying by the investment per square foot for both land and building, then multiplying by the average length of the vault run used to calculate vault and racking investment. Since the typical vault run is five feet wide, there are 2.5 feet of clearance from each wall. For every foot along the wall, there are therefore 2.5 square feet of floor space required. For each of the 25 fiber cables on the wall, 0.1 square feet is required.

Cable riser is used to route collocator-owned fiber from the first floor of the central office to overhead cable racking located on the collocation floor. Investment in cable riser was developed by first identifying the current cost of ladder racking required per fiber run per central office floor. The current cost of ladder racking per floor was identified on the basis of current vendor information. That investment amount then was divided by the estimated number of cables that will be placed on a ladder rack. Pacific Bell estimated that on average there will be a maximum of four collocators per central office (over the long run), each with two cable runs. Therefore, Pacific Bell computed the cost of ladder racking per fiber run per floor on the basis of eight cables per rack. Investment per fiber run per floor was then multiplied by the number of floors, by central office, to identify total cable riser investment in each office.

Land and building investment per fiber run per floor was determined by identifying the floor space requirements of each ladder rack floor plate and dividing by eight, the assumed number of cables per rack. Since six square feet of floor space is required for a floor plate, 0.75 square feet is required for each fiber cable. Land and building investment per floor was multiplied by the number of floors of ladder racking (determined by the level of the collocation floor) to arrive at total land and building investment for the office. For security reasons, Pacific Bell has placed the collocation floor in multi-story buildings as close to the ground floor as possible. This policy also minimizes the land and building investment required to furnish service to collocators.

The land and building investments per square foot are the current-cost averages for the 51 central offices which were included with the supporting documentation submitted on February 16, 1993 with Transmittal No. 1613. These averages are based on the investments identified for the Floor Space function.

c. Common Construction Function

Common Construction function is a recurring (discussed above) and non-recurring function. The investment amounts identified for this function reflect costs incurred in connection with Central Office construction "required for the provision of collocation services that cannot be attributed to a specific interconnector."[4] These investment amounts, however, are treated

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[4] Id. at n.43.

as contributed capital according to FCC rules[5] and the original cost is recovered up front from non-recurring charges from collocators. Although these investment amounts are not booked to a Pacific Bell asset account, the "cost factor" methodology of identifying recurring costs (described later) recognizes that every dollar of investment generates a certain amount of expense. Accordingly, the investment amounts are used as surrogates to identify appropriate amounts of maintenance, administration, and overheads. These costs are incurred as a result of the material and equipment in question being present on Pacific Bell premises. Because the investment is not capitalized as a Pacific Bell asset, no depreciation, cost of money, or income taxes are identified as costs for recovery. Pacific Bell, however, is responsible for maintaining and administering it.

Common Construction surrogate investment would normally be booked to digital circuit equipment (account 223210) and building (account 212100). Workpapers relating to these costs are contained in Appendix C.

The digital circuit equipment account consists of fiber cable ironwork and cable racking, a telephone service distribution terminal, and a Central Office ("C.O.") groundwire and bus bar. Common area fiber cable ironwork and cable racking are the support structure, suspended from the central office ceiling, which routes collocator owned fiber from the entrance on the collocation floor to the end of the interconnector-specific construction area. Installed costs per foot were identified from vendor-provided

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[5] 47 C.F.R. § 32.2000(2).

information and multiplied by the number of feet from entrance to collocation area, by central office, to arrive at total fiber cable ironwork and cable racking for each office. The cost per foot varies by central office according to whether or not some iron work already exists. Costs are higher where all new ironwork is required than where existing ironwork is in place and only needs augmenting. The telephone service distribution panel provides telephone service to the collocation area. The costs for the distribution panel, the C.O. ground wire, and bus bar are derived from actual cost experience with such facilities.

Fencing and gates for the common enclosure area are considered part of the building account. Costs were developed by identifying the installed cost per foot of fencing and the installed cost per gate, then multiplying by, respectively, the number of feet of common area fencing and common area gates required, by central office. The unit cost of fencing and gates was developed from current vendor information.

Pacific Bell recovers the recurring costs of this common area material and equipment on a "per collocator" basis as part of the floor space charge.[6] In the absence of a reliable, empirical forecast of demand for collocation, Pacific Bell generously estimated that the average number of interconnectors per central office would be four. This estimate reflects an optimistic long-term assessment of demand for this service. Pacific Bell then

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[6] Alternatively, Pacific Bell could have unbundled the floor space charge and prorated it based on the number of collocators per office; but this approach would have required a reliable demand estimate which cannot be made at this time.

divided total recurring common cost by the estimated average of four. An assumption of fewer than four collocators at any central office (some offices will almost certainly have only one or two) would increase the "per collocator" cost at that office.

d. Construction Provisioning Function

This is a non-recurring function only. Non-recurring functions are discussed below in Part A(b)(3).

e. Interconnector-Specific Construction Function

This is a recurring and non-recurring function. As in the case of (and in the same manner as for) the common construction function described above, non-recurring investments identified for these functions are used as surrogates for the development of the recurring administrative maintenance and overhead expenses. The amounts are also comprised of digital circuit equipment (account 223210) and building (account 212100). Workpapers associated with these costs are contained in Appendix E.

The digital circuit equipment account consists of ironwork and cable racking and a Point of Termination ("POT") locking cover. The ironwork and cable racking associated with the Interconnection-Specific Construction Function make up the support structure that is suspended from the central office ceiling, for one half of a building bay. (There generally will be two collocation "cages" per building bay.) Pacific Bell first identified the installed costs for establishing two spaces in a single building bay using current vendor information and divided

that amount by two to determine the ironwork and cable racking cost per collocator. The cost of the POT locking cover, which provides each collocator with exclusive access to its own point of termination, is an estimate developed on the basis of vendor information.

Interconnector-Specific Construction costs assigned to the building account consist of the cost of the collocator enclosure, which includes an AC outlet, telephone service prewiring, and fire detection equipment. Enclosure costs for a single collocator were developed by identifying the installed costs of two adjacent "cages," including fencing and gates, then dividing by two. The cost of the outlet prewiring and fire alarm was derived from current vendor information.

Interconnector-Specific Construction costs were not developed by individual central office. Rather, Pacific Bell calculated these costs based on two different scenarios: 1) a central office that has partial ironwork in the collocation area; and 2) a central office that has no such facilities currently in place. As noted above, costs are lower in offices where some ironwork exists, because that equipment can be augmented to serve EIS customers.

f. Floor Space Function

Investment for the Floor Space function, which is a recurring function only, is comprised of land (account 211100) and building (account 212100). This function is included in Pacific Bell's floor space rate element along with maintenance and

administration on contributed capital items from the common construction function, the interconnector specific construction function, the DC power installation function, and the security installation function. The workpapers in Appendix F show the derivation of these costs.

Floor space investment was developed by identifying the current cost per square foot of land and building. Investment in land was developed on a central office-specific basis and reflects the current appraised value per square foot of land for each central office site, as identified by an independent third party realty firm. Hence, this portion of floor space investment represents the current cost of purchasing land in the area of a specific central office location. Building investment reflects the current cost per square foot of constructing a building which meets central office specifications for earthquake proofing, floor loads, and environmental control. The same construction cost per square foot was used for all buildings tariffed for physical collocation. Actual experience from recent central office construction jobs, together with the Means Cost Estimating System, a widely used system in the construction industry, were used to identify construction costs.

Both the land and building cost per square foot were converted into a cost per square foot of assignable building space, a standard real estate industry practice. This conversion accounts for the fact that not all building space is available for assignment to tenants; the unassignable portion consists of common access

space available to all who use the building (e.g., elevators, stairwells, and common corridors).

The current cost of land per square foot was multiplied by the actual square footage of land for the central office site. Total land investment was then divided by the assignable building square footage for the site. This calculation identified the land portion of an assignable square foot of building. The current building cost per square foot was multiplied by the actual (gross) square footage of the building, then divided by the assignable square footage to calculate building cost per assignable square foot. The gross-to-assignable ratio is a constant of 1.25 and represents the approximate average of Pacific Bell central office buildings.

Total floor space land and building investment per collocator was identified by multiplying the respective costs per square foot by 130. The 100 square feet required for an enclosure was increased by 30% in order to account for the minimum amount of additional space required to allow access to the collocation space. This access area assignment represents a 3 foot by 10 foot area in front of the 10 foot by 10 foot space. In other words, a collocator will actually require at least 130 square feet in order to occupy a 10 foot by 10 foot equipment space, or, 130 square feet per 100 square foot enclosure. (See Appendix O, Diagram A.) The 3 foot by 10 foot area is assignable square footage within the building and is not part of common access (unassignable) building space. As with the 10 foot by 10 foot space, it is space which

will be unavailable for Pacific Bell's use as a result of collocation.

g. Termination Equipment Function

Termination equipment unit investment associated with a digital interface panel, a digital cross connect system and a DSX termination are included in this recurring function. Workpapers associated with this function are contained in Appendix G. The digital interface panel is used for cross connection functions with the interconnectors. The digital cross connect system provides remote testing and monitoring capabilities necessary for provisioning and monitoring service. A connection directly from the digital interface panel to the digital cross connect system is costly as it requires many dedicated, idle ports, available only for collocation service. Using the DSX as an intermediate termination allows more efficient utilization for the digital cross connect system. Appendix G identifies the amount of investment associated with each item mentioned above. Unit investments are based on installed costs and average expected utilization.

Appendix G identifies the total investment associated with DS1 and DS3 termination equipment functions. This investment is booked to the digital circuit equipment account. Gross investment for this element also includes land and building investment. Recurring costs for each type of investment are identified in this section. There are no non-recurring costs associated with this function.

h. DC Power Installation Function

As with the Common and Interconnector-Specific Construction functions, material identified for DC Power Distribution Feeder Installation is recovered through a non-recurring charge and is not booked as an asset to Pacific Bell's accounts. Accordingly, an investment surrogate was used to identify appropriate maintenance, administration, and overhead expense. Surrogate investment for this function is digital circuit equipment (account 223210) and is comprised of power cable ironwork and cable racking, and the power distribution feeder cable itself. The workpapers associated with this function are presented in Appendix H.

Power cable ironwork and cable racking make up the support structure, suspended from the central office ceiling, which routes DC power distribution feeder cabling from the battery distribution fuse bay ("BDFB") to the edge of the interconnector-specific construction area. This structure is separate from ironwork and cable racking used to route the customer's fiber. Installed costs per foot were identified from current vendor information and multiplied by the number of feet from BDFB to collocation area, by central office, to calculate the total power cable ironwork and cable racking cost for each office. The cost per foot varies by central office according to whether or not some power cable iron work is already in place in the office. Because this is a common construction type of cost and is recovered on a "per collocator" basis (as part of recurring floor space charge),

the total cost was divided by four, the estimated long-term average number of collocators per central office.

Surrogate investment for power cabling was developed by identifying the installed cost per foot of power cable and multiplying by the estimated number of feet from the BDFB to collocator equipment. Costs per foot were based on vendor prices which vary by gauge. The gauge, in turn, varies by the length of the feeder run supporting 40 amps. The costs reflect a 40 amp power increment. Normally capitalized engineering as well as the fixed installation set up cost were added to the surrogate investment amount.

i. DC Power Generation Function

Investment in DC Power Generation consists of digital circuit equipment (account 223210), land (account 211100), and building (account 212100). This function is a recurring function only and is equivalent to Pacific Bell's recurring DC Power rate element. The workpapers associated with this function are contained in Appendix I.

DC power investment was developed by identifying the current cost per amp of supplying DC power.[7] This was accomplished by use of a construct which models a typical central office power serving arrangement. The serving arrangement includes a back-up generator, power plant (batteries, rectifiers, and associated equipment), cable and cable racking from the power plant to the

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[7] The investment for 40 amps is simply the per amp investment times 40.

BDFB, and the BDFB itself. Power distribution feeder cable and cable racking from the BDFB to collocator equipment is accounted for in the DC Power Installation Function, as described above.

To calculate per amp investment, each element in the construct is divided by the total number of amps that item of equipment is capable of providing. In other words, if the back-up generator is capable of supplying X amps, its current cost is divided by X. If the power plant is capable of supplying Y amps, its current cost is divided by Y. If the BDFB is capable of supplying Z amps, its current cost, along with that of the cable and racking from the power plant to the fuse bay, is divided by Z. Typically, a back-up generator has greater capacity than a single power plant, because a back-up generator can serve more than a single power plant. Similarly, a power plant's capacity is greater than a BDFB because a single power plant can serve several fuse bays. Diagram B in Appendix O illustrates the DC power construct. The use of each element's full-capacity level reduces the unit investment cost to a lower level than would be reached if the calculation were based on capacity actually in use.

Land and building required to house the power equipment were identified by determining the floor space needed for the power equipment and developing a square footage requirement per amp. As the workpapers show, about one-tenth of a square foot is required for one amp and, hence, just over 4 square feet is needed for 40 amps. These land and building investments are the same current-cost averages for the 51 Pacific Bell central offices which were used for the Entrance Facility Space function.

j. Cross-Connection Provisioning Function

This is a non-recurring function only. Non-recurring functions are discussed below.

k. Cross-Connection Cable and Cable Support Function[8]

The investment associated with the cable and cable support function was identified by estimating the average material and labor costs associated with placing a cable between the interconnectors space and Pacific Bell's facilities. Unit pair costs were identified by dividing total investment by the number of installed pairs at total capacity. This reflects the economies of installing many pairs at one time. For example the smallest cable Pacific Bell would use to connect collocators with Pacific Bell's DS1 facilities has 28 pairs. The unit pair investment would be 1/28 of total investment. Cross connections require two pairs (transmit and receive) per connection. Unit investments were then weighted by expected average utilization.

Appendix K identifies the total investment associated with DS1 and DS3 Cable and Cable Support functions. This investment is booked to the digital circuit equipment account. Gross investment for this element also includes land and building investment. Recurring costs for each type of investment are identified in this section. There are no non-recurring costs associated with this function.

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[8] The Commission has requested that the LECs include the costs that apply between the interconnector's space and the LEC's Main Distribution Frame ("MDF"). Pacific Bell does not provision EIS Cross-Connection ("EISCC") on an MDF.

1. Cross-Connection Equipment Function[9]

Cross connection equipment investment is not projected to be required at this time in most central offices. This equipment, however, is required for interconnection in the LA Madison office. There are no historical data available on which to base a reliable estimate of how often this equipment will be required. Therefore, to develop a conservative cost estimate, Pacific Bell assumed that only the LA Madison office will require this equipment. To incorporate this assumption, the occurrence factor used to weight investment was based on in-service DS1 volumes in the Madison office divided by the total in-service volumes for all collocation offices. As EIS is provisioned and actual investments are tracked, Pacific Bell will reassess this costing assumption. Thus, the associated investment was weighted approximately by its occurrence and included in the statewide average investment as shown in Appendix L.

The equipment used in the Madison office transports DS1 signals on a mini span carrier system between the interconnectors' space and Pacific Bell's facilities. This alternative is the most economical and expedient alternative for interconnection as intra-office cable routes are not available. The equipment associated with this function allows many DS1 interconnections to be made via a fiber optic system.

Appendix L identifies the total unit investment associated with the DS1 and DS3 cross connection equipment

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[9] The Commission has requested that the LECs include the costs that apply between the interconnector's space and the LEC's MDF. Pacific Bell does not provision EISCC on an MDF.